

Sequence Listings

Sequence 1 – Human cDNA sequence of PARP-1

```
1  cggccgccca gccccggggg cagggaagc ctaaattacg gaattaccgc gagcaaggag
61  cgcggaatcg gggagcgtcc ggagctagct ggatcctcta ggcaggatgg tgatgggaat
121 cttigcaaat tgtatcttct gtttgaaagt gaagtactta cctcagcagc agaagaaaaa
181 gctacaaact gacattaagg aaaatggcgg aaagttttcc ttttcgttaa atcctcagtg
241 cacacatata atcttagata atgctgatgt tctgagtcag taccaactga attctatcca
301 aaagaaccac gttcatattg caaaccaga ttttatatgg aaatctatca gagaaaagag
361 actcttggat gtaaagaatt atgacctta taagcccctg gacatcacac cacctcctga
421 tcagaaggcg agcagttctg aagtgaaaac agaaggctta tgcccggaca gtgccacaga
481 ggaggaagac actgtggaac tcactgagtt tggatgcag aatgtgaaa ttctcatct
541 tctcaagat ttgaagttg caaaatataa caccttggag aaagtgggaa tggagggagg
601 ccaggaagct gtggtggtgg agcttcagtg ttcgcgggac tccagggact gtccttctct
661 gatatcctca cactcctcc tggatgatgg catggagact agaagacagt ttgctataaa
721 gaaaacctct gaagatgcaa gtgaatactt tgaaaattac attgaagaac tgaagaaaca
781 aggatttcta ctaagagaac attcacacc tgaagcaacc caattagcat ctgaacaatt
841 gcaagcattg ctttggaggg aagtcatgaa tcaagcact ctgagccaag aggtgagcga
901 tttagtagag atgatttggg cagaggccct gggccacctg gaacacatgc ttctcaagcc
961 agtgaacagg attagcctca acgatgtgag caaggcagag gggattctcc ttctagtaaa
1021 ggcagcactg aaaaatggag aaacagcaga gcaattgcaa aagatgatga cagagtttta
1081 cagactgata cctcacaag gcacaatgcc caaagaagtg aacctgggac tattggctaa
1141 gaaagcagac ctctgccagc taataagaga catggttaat gtctgtgaaa ctaattgtc
1201 caaacccaac ccaccatccc tggccaaata ccgagctttg aggtgcaaaa ttgagcatgt
1261 tgaacagaat actgaagaat ttctcagggt tagaaaagag gttttgcaga atcatcacag
1321 taagagccca gtggatgtct tgcagatatt tagagttggc agagtgaatg aaaccacaga
1381 gtttttgagc aaacttggtg atgtgaggcc cttgttgcag ggttctcctg tacaaaacat
1441 cgtgggaatc ttgtgtcgag ggttgcttt acccaaagta gtggaagatc gtggtgtgca
1501 aagaacagac gtcggaaacc ttggaagtgg gattatttc agtgattcgc tcagtacaag
1561 tatcaagtac tcacaccggg gagagacaga tggcaccaga ctctgtctca ttttgacgt
1621 agccctcgga aagtgtatgg acttacatga gaaggacttt tccttaactg aagcaccacc
1681 aggctacgac agtgtgcatg gagtttcaca aacagcctct gtcaccacag actttgagga
1741 tgaatgaatt gttgtctata aaaccaatca ggttaaaatg aaatatatta ttaaattttc
1801 catgcctgga gatcagataa aggactttca tcctagtgat catactgaat tagaggaata
1861 cagacctgag ttttcaaatt ttcaaaggt tgaagattac cagttaccag atgccaaaac
1921 ttcagcagc accaaggccg gcctccagga tgcttctggg aacttggttc ctctggagga
1981 tgtccacatc aaaggggagaa tcatagacac ttagcccag gtcattgttt tcagacata
2041 cacaataaaa agtcacgtgc ccattgaggc aaaatataatc ttcctttgg atgacaaggc
2101 cgctgtgtgt ggcttogaag ccttcatcaa tgggaagcac atagttggag agattaaaga
2161 gaaggaagaa gccagcaag agtacctaga agccgtgacc cagggccatg gcgttacct
2221 gatgagtcag gatgtccgg acgtttttac tgtaagtgtt ggaaacttac ccctaaggc
2281 taaggttctt ataaaaatta cctacatcac agaactcagc atcctgggca ctgttggtgt
2341 cttttcatg cccgccaccg tagcacctg gcaacaggac aaggcttga atgaaaacct
2401 tcaggatata gtagagaaga ttgtataaa agaaatagga acaaagcaaa gcttctctt
```

2461 gactatgtct attgagatgc cgtacgtgat tgaattcatt ttcagtata ctcatgaact
2521 gaaacaaaag cgcacagact gcaaagctgt cattagcacc atggaaggca gctccttaga
2581 cagcagtga tttctctcc acatcggtt gtctgtgcc tatctccaa gaatgtggg
2641 tgaaaaacat ccagaaaaag aaagcgaggc ttgcatgctt gtcttcaac ccgatctga
2701 tgtcgacctc cctgacctag ccaatgagag cgaagtgatt attgtcttg actgctccag
2761 ttccatggag ggtgtgacat tcttgaagc caaggaaac gccttgcatg cgctgtcct
2821 ggtgggtgag aagcagaaag taaatattat ccagttcggc acaggttaca aggagctatt
2881 ttcgtatcct aagcatatca caagcaatac cgcggcagca gagttcatca tgtctgccac
2941 acctaccatg gggaacacag acttctggaa aacactccga tatcttagct tattgtaccc
3001 tgctcgaggg tcacggaaca tctcctggt gtctgatggg cacctccagg atgagagcct
3061 gacattacag ctctgaaga ggagccgccc gcacaccagg ttattgcct gcggtatcgg
3121 ttctacagca aatcgtcacg tcttaaggat ttgtcccag tgtggtgcc gagtattga
3181 atattttaat gcaaatcca agcatagtgt gagaaaacag atagaagacc aatgaccag
3241 gctatgttct ccgagttgcc actctgtctc cgtcaaatgg cagcaactca atccagatgc
3301 gcccgaggcc ctgcaggccc cagccaggt gccatcctg ttctgcaatg atcgactcct
3361 tgtctatgga ttactctc actgcacaca ggcaactctg tgtgactaa ttcaagagaa
3421 agaattttgt acaatggtgt cgactactga gcttcagaag acaactggaa ctatgatcca
3481 caagctggca gcccgagctc taatcagaga ttatgaagat ggcattcttc acgaaaatga
3541 aaccagtcac gagatgaaaa acaaacctt gaaatctctg attattaaac tcagtaaaga
3601 aaactctctc ataacacaat ttacaagctt tgtggcagtt gagaaaagg atgagaatga
3661 gtcacctttt cctgatatc caaaagttc tgaacttatt gccaaagaag atgtagactt
3721 cctgccctac atgagctggc aggggggaacc ccaagaagcc gtcaggaacc agtctctttt
3781 agcatcctct gagtggccag aattacgtt atccaaacga aaacatagga aaattccatt
3841 ttccaaaaga aaaatggaat tatctcagcc agaagttct gaagatttg aagaggatgc
3901 cttaggtgta ctaccagctt tcacatcaaa ttggaacgt ggacgtgtgg aaaagctatt
3961 ggatttaagt tggacagagt catgtaaacc aacagcaact gaaccactat ttaagaaagt
4021 cagtccatgg gaaacatcta ctctagctt tttctatt ttggtccgg cgttggttc
4081 ctatcttacc cagactacc gcgtcacag tctgcttcc ttgtctttg cctcatatcg
4141 tcaggtagct agtttcggtt cagctgtcc tcccagacag ttgatgcat ctcaattcag
4201 ccaaggccct gtgctggca ctgtgtgta ctggatccca cagtcggcgt ctgtcccac
4261 aggacctccc cagaaccac ctctgcacc ctattgtggc attgtttt caggagctc
4321 attaatgtct gcacagtctg ctccactgca acatcctgga ggcttacta ccaggcctc
4381 tgctggcacc ttccctgagc tggattctcc ccagttcat ttctcttc ctacagacc
4441 tgatcccatc agaggtttg ggtctatca tccctctgt tactctctt ttactttca
4501 acctccgca gcctcttga ctgccaacct taggtgcca atggcctctg cttaacctga
4561 ggctcttgc agtcagtccc ggactacccc agtagatctc tgtctctag aagaatcagt
4621 aggagctc gaaggagtc gatgtcctgt cttgctttt caaagtctg acacagaaag
4681 tgatgagcta tcagaagtac ttcaagacag ctgctttta caaataaaat gtgatacaa
4741 agatgacagt atcccgtct tcttggaagt aaaagaagag gatgaaatag tgtgcacaca
4801 aactggcag gatgtgtgc ctggacaga actcctcagt ctacagacag aggatggctt
4861 ctggaaactt acaccagaac tgggacttat attaatctt aatacaaatg gttgcacag
4921 ctttctaaa caaaaaggca ttcaatctct aggtgtaaaa ggaagagaat gtctctgga
4981 cctaattgcc acaatgctgg tactacagtt tattgcacc aggttggaag aagagggaat
5041 agtgttcaaa tactgatga aaatggatga ccttctatt tccaggaata ttccctgggc
5101 tttgaggca ataaagcaag caagtgaatg ggtaagaaga actgaaggac agtaccatc
5161 tatctgccc cggttgaac tggggaacga ctgggactct gccaccaagc agtgctggg
5221 actccagccc ataagcactg tgccccctt tcatagagtc ctccattaca gtcaaggcta

5281 agtcaaatga aactgaattt taaacttttt gcatgcttct atgtagaaaa taatcaaatg
5341 ataatagata cttataatga aacttcatta aggtttcatt cagtgtagca attactgtct
5401 ttaaaaatta agtggaagaa gaattacttt aatcaactaa caagcaataa taaatgaaa
5461 cttaaaat

Sequence 2 – Human cDNA sequence of PARP-2

1 ctagaattca gcggccgctg aattctaggc ggcgccggcgg cgacggagca ccggcggcgg
61 cagggcgaga gcattaatg aaagcaaaag agttaataat ggcaacacgg ctccagaaga
121 ctctcccct gccaaagaaa ctcgtagatg ccagagacag gagtcgaaaa agatgcctgt
181 ggctggagga aaagctaata aggacaggac agaagacaag caagatggta tgccaggaag
241 gtcattggcc agcaaaaggg tctctgaatc tgtgaaggcc ttgctgttaa agggcaaacg
301 tctgtggac ccagagtgtg cagccaaggt ggggaaggct catgtgtatt gtgaaggaaa
361 tgatgtctat gatgtcatgc taaatcagac caatctccag ttcaacaaca acaagtacta
421 tctgattcag ctattagaag atgatccca gaggaacttc agtgtttgga tgagatgggg
481 ccgagtggg aaaatgggac agcacagcct ggtggcttgt tcaggcaatc tcaacaaggg
541 caaggaaatc ttccagaaga aattccttga caaacgaaa aacaattggg aagatcgaga
601 aaagtttgag aaggtgcctg gaaaatatga tatgtacag atggactatg ccaccaatac
661 tcaggatgaa gaggaacaaa aaaaagagga atctcttaaa tctccctga agccagagtc
721 acagctagat ctccgggtac aggagttaat aaagttgatc tgtaatgttc aggccatgga
781 agaaatgatg atggaaatga agtataatac caagaaagcc ccaattggga agctgacagt
841 ggcacaaatc aaggcagggt accagtctct taagaagatt gaggattgta ttccggctgg
901 ccagcatgga cgagctctca tggagcatg caatgaattc tacaccagga ttccgcatga
961 ctttgactc cgtactctc cactaatccg gacacagaag gaactgtcag aaaaaatata
1021 attactagag gctttgggag acattgaaat tgctattaag ctggtgaaaa cagagctaca
1081 aagcccagaa caccattgg accaacacta tagaaaccta cattgtgcct tgcgccccct
1141 tgaccatgaa agttacgagt tcaaagtgat ttccagtag ctacaatcta cccatgctcc
1201 cacacacagc gactatacca tgacctgtct ggatttggtt gaagtggaga aggatgggtg
1261 gaaagaagcc tcagagagg acctcataa caggatgctt ctatggcatg gttccaggat
1321 gagtaactgg gtgggaatct tgagccatgg gcttcgaatt gccaccctg aagctcccat
1381 cacaggttac atgtttggga aaggaatcta cttgtctgac atgtcttcca agagtccaa
1441 ttactgctt gcctctcgcc taaagaatac aggactgctg ctcttatcag aggtagctct
1501 aggtcagtgt aatgaactac tagaggccaa tctaaggcc gaaggattgc tcaaggtaa
1561 acatagcacc aaggggctgg gcaagatggc tccagttct gccactcg tcaccctgaa
1621 tgggagtaca gtgccattag gaccagcaag tgacacagga attctgaatc cagatggta
1681 taccctcaac tacaatgaat atattgtata taacccaac caggtccgta tgcggtacct
1741 tttaaagggt cagtttaatt tcttcagct gtggtgaatg ttgatcttaa ataaaccaga
1801 gatctgatct tcaagcaaga aaataagcag tgtgtactt gtgaatttg tgatatttta
1861 tgtaataaaa actgtacagg tctaaaaaaa aaaaaaaaaa aaaaaaaaaa

Sequence 3 – Human cDNA sequence of PARP-3

1 tgggactggt cgcctgacte ggcctgcccc agcctctgct tcaccccaact ggtggccaaa
61 tagccgatgt ctaatcccc acacaagctc atccccggcc tctgggattg ttgggaattc
121 tctccctaat tcacgcctga ggctcatgga gacttgctag acctgggact gccctgggag
181 gcgcacacaa ccaggccggg tggcagccag gacctctccc atgtccctgc tttcttggc
241 catggctcca aagccgaagc cctgggtaca gactgagggc cctgagaaga agaagggccg
301 gcaggcagga agggaggagg accccttccg ctccaccgt gaggccctca aggccatacc
361 cgcagagaag cgcataatcc gcgtggatcc aacatgtcca ctacgcagca accccgggac
421 ccaggtgtat gaggactaca actgcaccct gaaccagacc aacatcgaga acaacaacaa
481 caagttctac atcatccagc tgcctcaaga cagcaaccgc ttcttcacct gctggaaccg
541 ctggggccgt gtgggagagg tggccagtc aaagatcaac cacttcacaa ggctagaaga
601 tgcaaagaag gactttgaga agaaattcg ggaaaagacc aagaacaact gggcagagcg
661 ggaccattt gtgtctcacc cgggcaagta cacacttacc gaagtacagg cagaggatga
721 ggcccaggaa gctgtggtga aggtggacag aggccagtg aggactgtga ctaagcgggt
781 gcagccctgc tccctggacc cagccacgca gaagctcacc actaacatct tcagcaagga
841 gatgttcaag aacaccatgg ccctcatgga cctggatgtg aagaagatgc ccctgggaaa
901 gctgagcaag caacagattg cacgggggtt cgaggccttg gaggcgctgg aggaggccct
961 gaaaggcccc acggatggtg gccaaagcct ggaggagctg tcctcacact ttacaccgt
1021 catcccgcac aacttcggcc acagccagcc cccgccatc aattcccctg agctcttgc
1081 ggccaagaag gacatgctgc tgggtctggc ggacatcgag ctggcccagg ccctgcaggc
1141 agtctctgag caggagaaga cgggtggagga ggtgccacac cccctggacc gagactacca
1201 gcttctcaag tgccagctgc agctgctaga ctctggagca cctgagtaca aggtgataca
1261 gacctactta gaacagactg gcagcaacca caggtgccct acacttcaac acatctggaa
1321 agtaaaccac gaaggggagg aagacagatt ccaggccac tccaaactgg gtaatcgga
1381 gctgctgtgg catggcacca acatggccgt ggtggccgcc atctcacta gtgggctccg
1441 catcatgcca cattctggtg ggcgtgttgg caagggcacc tactttgcct cagagaacag
1501 caagtcagct ggatatgtta ttggcatgaa gtgtggggcc caccatgtcg gctacatgtt
1561 cctgggtgag gtggccctgg gcagagagca ccatacaac acggacaacc ccagctgaa
1621 gagccacct cctggcttcg acagtgtcat tggccaggc cacaccgagc ctgatccgac
1681 ccaggacact gatttgagc tggatggcca gcaagtgggt gtgccccagg gccagcctgt
1741 gccctgcccc gatttcagca gctccacatt ctcccagagc gattacctca tctaccagga
1801 gagccagtgt cgcctgcgct acctgctgga ggtccacctc tgagtggccg ccctgtcccc
1861 cggggctctg caaggctgga ctgtgatctt caatcatcct gccatctct ggtaccctca
1921 tatcactcct tttttcaag aatacaatac gttgtgtta actatagtca ccatgctgta
1981 caagatccct gaacttatgc ctctaactg aaattttgta ttcttgaca catctgcccc
2041 gtccctctcc tcccagccca tggtaaccag catttgactc ttacttgta taagggcagc
2101 ttttataggt tccacatgta agtgagatca tgcagtgtt gtctttctgt gcctggctta
2161 ttctactcag cataatgtgc accgggttca cccatgttt cataaatgac aagatttcct
2221 cctttaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaa

Sequence 4 – Human gDNA sequence of Tankyrase 1

1 cgaagatggc ggcgtcgcgt cgctctcagc atcatcacca ccatcatcaa caacagctcc
61 agcccgcccc aggggcttca gcgcgcgcgc cgccacctcc tccccactc agccctggcc
121 tggccccggg gaccaccca gccttccca cggccagcgg cctggcccc ttcgctccc
181 cgcggcacgg cctagcgtg cggaggggg atggcagtcg ggatccgcc gacaggcccc
241 gatccccgga ccggttgac ggtaccagct gtgcagtac caccagcaca atctgtaccg
301 tcgccgcgc tcccgtggc ccagcgttt ctactcacc tgccgctggg gtcgtccca
361 acccagccgg cagtggcagt aacaattcac cgtcgtctc ttctccccg acttcttct
421 catctctc tccatctcc cctggatga gcttggcga gagccccgag gcggccggag
481 ttacagcac agcaccactg gggcctgggg cagcaggacc tgggacagg gtcccagcag
541 tgagcggggc cctacgggaa ctgctggagg cctgtcgaa tggggacgtg tcccgggtaa
601 agaggctggt ggacgcggca aacgtaaag caaaggacat ggccggccgg aagtcttct
661 ccctgcact cgctgcaggt ttggaagga aggatgtgt agaacacta ctacagatgg
721 gtgctaagt ccacgctcg gatgatggg gtctatccc gcttcataat gctgttctt
781 ttggccatgc tgaggttgag agtctgtat tggccaagg agctgatcca aatgccaggg
841 ataactgga ctatacact ctgcatgaag ctgctattaa agggaagatc gatgtgtgca
901 ttgtgtgtg gcagcacgga gctgaccaa acattcgga cactgatggg aaatcagccc
961 tggacctggc agatcctca gaaaagctg tccttacagg tgaatacaag aaagacgaac
1021 tctagaagc tgctaggagt ggtaataag aaaaactaat ggctttactg actccttaa
1081 atgtgaattg ccatgcaagt gatgggcga agtcgactcc ttacatcta gcagcgggct
1141 acaacagagt tcgaatagt cagctctc ttacagcatg tgctgatgt catgcaaaag
1201 acaaaagggt acttgtcct ctctataat catgttcata tggacattat gaagtcacag
1261 aactgctact aaagcatgga gcttgtgta atgcatgga tctctggcag ttactccac
1321 tgcacgaggc tgctccaag aaccgttag aagtctgctc ttgttactt agccatggcg
1381 ctgatectac gttatgaac tgccatggca aaagtctgt ggatatggct ccaactccgg
1441 agcttaggga gagattgact tatgaatta aaggtcatt ttactaca gcagccagag
1501 aagcagact agctaaagt aaaaaaacac tcgctctgga aatcattaat tcaaaacaac
1561 cgcagtctca tgaacagca ctgactgtg ctgtggcctc tctcatccc aaacgtaaac
1621 aagtacaga attgttact agaaaaggag caaatgttaa tgaaaaaaat aaagattca
1681 tgactccct gcatgttga gccgaaagag ccataatga tgcattgga gttctgcata
1741 agcatggcgc caagatgaat gactggaca cccttggtc gactgcttg catagagccg
1801 ccctagcagg ccactgcag acctgccgc tctgtctgag ttacggctct gacctcca
1861 tcatctcctt acaaggctc acagcagcac agatgggcaa tgaagcagt cagcagattc
1921 tgagtgtgag ttacggctct gacctcca tcatctcctt acaaggctc acagcagcac
1981 agatgggcaa tgaagcagt cagcagattc tgagtgtgca ttcgtagata gtgatcattc
2041 tacttcagcc ttaatggtg tcttgagacg ggaagattta gaaggaaatc tatccagcat
2101 gtcttactg tcaacatgaa gactacacct atactgactt ctgatgttga ttatcgactc
2161 tttagggcat ctaaagctgg agacttgga actgtgaagc aactttgcag ctctcaaaat
2221 gtgaattgta gagacttaga gggccggcat tccacgccct tacacttcgc agcaggctac
2281 aacagagtac acctatactg acttctgatg ttgattatcg actcttagag gcactaaag
2341 ctggagactt ggaaactgtg aagcaactt gcagctctca aaatgtgaat ttagagact
2401 tagagggccg gcattccacg cccttacact tcgcagcagg ctacaaccgc gtgtctgtg
2461 tagagtacct gctacaccac ggtgccgatg tccatgcaa agacaagggt ggcttggtgc
2521 ccctcataa tgcctgttca tatggacact atagggtggc tgagcttita gtaaggcatg
2581 gggcttctgt caatgtggcg gacttatgga aatttcccc tctccatgaa gcagcagcta

2641 aaggaaagta tgaaatctgc aagctccttt taaaacatgg agcagatcca actaaaaaga
2701 acagagatgg aaatacacct ttgatttgg taaaggaagg agacacagat attcaggact
2761 tactgaaagg ggatgctgct ttgttgatg ctgccaagaa gggctgcctg gcaagagtgc
2821 agaagctctg taccacagag aatatcaact gcagagacac ccagggcaga aattcaaccc
2881 ctctgcacct ggcagcaggc tataataacc tggaagtagc tgaatatctt ctgagcatg
2941 gagctgatgt taatgccag gacaagggtg gtttaattcc tctcataat gcggcatctt
3001 atgggcatgt tgacatagcg gctttattga taaaatacaa cacgtgtgta aatgcaacag
3061 ataagtgggc gtttactccc ctccatgaag cagcccagaa aggaaggacg cagctgtgcg
3121 ccctcctct agcgcattgt gcagaccca ccatgaagaa ccaggaaggc cagacgcctc
3181 tggatctggc aacagctgac gatatcagag ctttctgat agatgccatg cccccagagg
3241 ccttacctac ctgttttaa cctcaggcta ctgtagtgag tgcctctctg atctcaccag
3301 catccacccc ctctgcctc tcggctgcca gcagcataga caacctcact ggccctttag
3361 cagagttggc cgtaggagga gcctccaatg caggggatgg cgccgcggga acagaaagga
3421 aggaaggaga agttgctggt ctgacatga atatcagcca atttctaaaa agccttgccc
3481 ttgaacacct tcgggatatc ttgaaacag aacagattac actagatgtg ttgctgata
3541 tgggtcatga agagttgaaa gaaataggca tcaatgcata tgggcaccgc cacaattaa
3601 tcaaaggagt agaaagactc ttaggtggac aacaaggcac caatccttat ttgactttc
3661 actgtgttaa tcagggaacg atttgctgg atcttgctcc agaagataaa gaatacagt
3721 cagtggaga agagatgcaa agtactattc gagaacacag agatgggtgt aatgctggcg
3781 gcatctcaa cagatacaat gtcattcga tcaaaaagt tgtcaacaag aagttgaggg
3841 agcggttctg ccaccgacag aaggaagtgt ctgaggagaa tcacaacct cacaatgagc
3901 gcatgttgtt tcatggttct ctttcatta atgccattat tcataaaggg ttgatgagc
3961 gacatgcata cataggagga atgtttgggg cgggattta tttgctgaa aactcctcaa
4021 aaagcaacca atatgtttat ggaattggag gaggaacagg ctgccctaca cacaaggaca
4081 ggtcatgcta tatatgtcac agacaaatgc tcttctgtag agtgaccctt gggaaatcct
4141 ttctgcagtt tagcacatg aaaaaggccc acgcgcctcc agggcaccac tcagtcatg
4201 gtagaccgag cgtcaatggg ctggcatatg ctgaatatgt catctacaga ggagaacagg
4261 cataccaga gtatcttacc acttaccaga tcatgaagcc agaagcccct tcccagaccg
4321 caacagccgc agagcagaag acctagtga tgcctgctgg tgaaggccag atcagatttc
4381 aacctgggac tggattacag aggattgttt ctaataacaa catcaatatt ctagaagtc
4441 ctgacagcct agaaataagc tgtttgtctt ctataaagca ttgctatagt g

Sequence 5 – Human mRNA sequence of Tankyrase 2

1 cgcgccgcct cgctagccga aacctgccc gccggtgccc ggccactgcg cacgcgcggg
61 acgacgtcac gtgcgtccc ggggctggac ggagctggca ggaggggcct tgccagcttc
121 cgccgccgcg tcgttcagg acccgagcgg cggattcgcg ctgcctccgc cgccgcgggg
181 cagccggggg gcagggagcc cagcgagggg cgcgctggg cgcggccatg ggactgcgcc
241 ggatccggtg acagcaggga gccaagcggc cggggccctg agcgctctt ctccgggggg
301 cctgccctc ctgctcgcg ggccggggct cctgctccg ttgctggcg tttgctggc
361 tttggcggcg gccaggatca ttcgggctg ccgctcgcc ggcgggggag cggcctgcgc
421 gagcgccgcg gccaggcggc tggagccggc cgcccgagag ctgttcgagg cgtgccgcaa
481 cggggacgtg gaacgagtca agaggctggt gacgcctgag aaggtgaaca gccgcgacac
541 ggcgggcagg aaatccaccc cgtgcactt cgccgcaggt tttgggcgga aagacgtagt
601 tgaatattg ctcagaatg gtgcaaatgt ccaagcacgt gatgatgggg gccttattcc
661 tctcataat gcatgctctt ttggtcatgc tgaagtagt aatctcttt tgcgacatgg
721 tgcagacccc aatgctcgag ataattgaa ttatactct ctccatgaag ctgcaattaa
781 aggaaagatt gatgtttgca ttgtgctgt acagcatgga gctgagccaa ccatccgaaa
841 tacagatgga aggacagcat tggatttagc agatccatct gccaaagcag tgcctactgg
901 tgaatataag aaagatgaac tcttagaaag tgccaggagt ggcaatgaag aaaaaatgat
961 ggctctactc acaccattaa atgtcaactg ccacgcaagt gatggcagaa agtcaactcc
1021 attacattg gcagcaggat ataacagagt aaagattgta cagctgttac tgcaacatgg
1081 agctgatgct catgctaaag ataaagggtg tctggtacca ttacacaatg cctgttctta
1141 tggtcattat gaagtaactg aacttttgg caagcatggt gcctgtgtaa atgcaatgga
1201 cttgtggcaa ttcactctc tcatgaggc agcttctaag aacagggttg aagtatgttc
1261 tcttctctta agttatgggt cagacccaac actgctcaat tgcacaata aaagtgctat
1321 agacttggct cccacaccac agttaaaaga aagattagca tatgaattta aaggccactc
1381 gttgctgcaa gctgcacgag aagctgatgt tactogaatc aaaaaacatc tctctctgga
1441 aatggtgaat tcaagcatc ctcaaacaca tgaaacagca ttgcattgtg ctgctgcatc
1501 tccatatccc aaaagaaagc aaatatgtga actgttgcta agaaaaggag caaacatcaa
1561 tgaaaagact aaagaattct tgactcctct gcacgtggca tctgagaaag ctcataatga
1621 tttgttgtaa gtagtggtga aacatgaagc aaaggtaat gctctggata atcttggtca
1681 gacttctcta cacagagctg catattgtgg tcatctaca acctgccgcc tactcctgag
1741 ctatgggtgt gatcctaaca ttatatccct tcagggttt actgctttac agatgggaaa
1801 tgaaaatgta cagcaactcc tccaagagg tatctcatta ggtaattcag aggcagacag
1861 acaattgctg gaagctgcaa aggtgggaga tctcgaaact gtaaaaaaac tgtgtactgt
1921 tcagagtgtc aactgcagag acattgaagg gcgtcagtct acaccacttc atttgcagc
1981 tgggtataac agagtgtccg tgggtggaata tctgctacag catggagctg atgtgcatgc
2041 taaagataaa ggaggccttg tacctttgca caatgcatgt tcttatggac attatgaagt
2101 tgcagaactt cttgttaaac atggagcagt agttaatgta gctgatttat ggaaatttac
2161 acctttacat gaagcagcag caaaaggaaa atatgaaatt tgcaaacctc tgctccagca
2221 tgggtgcagac cctacaaaaa aaaacaggga tggaaatact cctttggatc ttgttaaaga
2281 tggagataca gatattcaag atctgcttag gggagatgca gctttgctag atgtgccaa
2341 gaagggttgt ttagccagag tgaagaagt gtctctcct gataatgtaa attgccgga
2401 tacccaaggc agacattcaa cacctttaca tttagcagct ggttataata atttagaagt
2461 tgcagagtat ttgttacaac acggagctga tgtgaatgcc caagacaaag gaggacttat
2521 tcctttacat aatgcagcat cttacgggca ttagatgta gcagctctac taataaagta
2581 taatgcatgt gtcaatgcc cggacaaatg ggctttcaca cctttgcacg aagcagccca

2641 aaagggacga acacagcttt gtgctttgtt gctagcccat ggagctgacc cgactcttaa
2701 aaatcaggaa ggacaaacac ctttagattt agtttcagca gatgatgtca gcgctcttct
2761 gacagcagcc atgcccccat ctgctctgcc ctcttggtac aagcctcaag tgcataatgg
2821 tgtgagaagc ccaggagcca ctgcagatgc tctctcttca ggtccatcta gcccatcaag
2881 cctttctgca gccagcagtc ttgacaactt atctgggagt ttttcagaac tgtcttcagt
2941 agttagtcca agtggacag aggggtgcttc cagtttgag aaaaaggagg ttccaggagt
3001 agattttagc ataactcaat tcgtaaggaa tcttggaact gagcacctaa tggatatatt
3061 tgagagagaa cagatcactt tggatgtatt agttgagatg gggcacaagg agctgaagga
3121 gattggaatc aatgcttatg gacataggca caaactaatt aaaggagtcg agagacttat
3181 ctccggacaa caaggtctta acctatattt aactttgaac acctctggtg gtggaacaat
3241 tcttatagat ctgtctctg atgataaaga gtttcagtct gtggaggaag agatgcaaaag
3301 tacagttcga gagcacagag atggagggtca tgcagggtgga atcttcaaca gatacaatat
3361 tctcaagatt cagaagggtt gtaacaagaa actatgggaa agatacactc accggagaaa
3421 agaagtttct gaagaaaacc acaacctatg caatgaacga atgctatttc atgggtctcc
3481 ttttgtaat gcaattatcc acaaggcctt tgatgaaagg catgctgaca taggtggtat
3541 gtttgagctt ggcatttatt ttgctgaaaa ctcttccaaa agcaatcaat atgtatatgg
3601 aattggagga ggtactgggt gtccagtcca caaagacaga tcttggtaca ttgccacag
3661 gcagctgctc ttgtccggg taaccttggg aaagtcttc ctgcagtcca gtgcaatgaa
3721 aatggcacat tctctccag gtcatcactc agtcactggt aggccagtg taaatggcct
3781 agcattagct gaatatgtta ttacagagg agaacaggct tctctgagt attaatatc
3841 ttaccagatt atgaggcctg aaggtatggt cgtgggataa atagtattt taagaaacta
3901 attccactga acctaaaac atcaaagcag cagtggcctc tacgtttac tctttgctg
3961 aaaaaaaatc atcttgccca caggcctgtg gcaaaaggat aaaaatgtga acgaagtta
4021 acattctgac ttgataaagc ttaataatg tacagtgtt tctaatatt tctgtttt
4081 tcagcacttt aacagatgcc attccagggt aaactgggtt gtctgtacta aattataaac
4141 agagttaact tgaacctttt atatgttatg cattgattct aacaaactgt aatgccctca
4201 acagaactaa tttactaat acaactatgt gtctttaa acacagcatt tacactgaat
4261 acaatttcat ttgtaaaact gtaataaga gctttgtac tagcccagta ttatttaca
4321 ttgctttgta atataaatct gtttagaac tgcagcgggt tacaaaattt ttcatatgt
4381 attgttcatc tatacttcat cttacatcgt catgattgag tgatctttac atttgattcc
4441 agaggctatg ttcagttgtt agttgggaaa gattgagta tcagatttaa ttgccgatg
4501 ggagccttta tctgtcatta gaaatcttc tcatttaaga acttatgaat atgctgaaga
4561 ttaatttgt gatactttg tatgtatgag acacattcca aagagctcta actatgatag
4621 gtctgatta ctaaagaagc ttcttactg gcctcaattt ctagcttca tgttggaana
4681 tttctgcag tcttctgtg aaaattagag caaagtgtc ctgttttta gagaaactaa
4741 atcttgctgt tgaacaatta ttgtgttctt tcatggaac ataagtagga tgttaacatt
4801 tccagggtgg gaagggtaat cctaaatcat tcccaatct attctaatta ccttaaatct
4861 aaaggggaaa aaaaaatca caaacaggac tgggtagttt ttatcctaa gtatatatt
4921 tctgttctt ttacttgggt ttattgctg tatttatagc caatctatac atcatgggta
4981 aacttaacc agaactataa aatgtagtgt tttagtccc cttaggcct cctgaatggg
5041 caagtgcagt gaaacagggt ctctctgctc ctgggttttc tctcatgat gttatgcca
5101 attggaaata tgctgtcagt ttgtgcacca tatggtgacc acgctgtgc tcagttggc
5161 agctatagaa ggaaatgctg tccataaaa tgccatccct atttctaata taacactctt
5221 ttccaggaag catgttaag catctgtta cagagacata catccattat ggcttgcaa
5281 tctctttt ttgttgactc tagtccctt caaagtcgag gaaagatctt tactactta
5341 atgaggacat tccccatcac tgtctgtacc agttaccct tattttacgt ttattcagt
5401 ctgtaatta actggccctt tgcagtaact tgtacataaa gtgctagaaa atcatgtcc

5461 ttgtcctgag taagagttaa tcagagtaag tgcatttctg gagttgttc tgtgatgtaa
5521 attatgatca ttatttaaga agtcaaatcc tgatcttgaa gtgctttta tacagctctc
5581 taataattac aaatatccga aagtcatttc ttggaacaca agtggagtat gccaaatttt
5641 atatgaattt ttcagattat ctaagcttcc aggttttata attagaagat aatgagagaa
5701 ttaatggggt ttatatttac attatctctc aactatgtag cccatattac tcaccctatg
5761 agtgaatctg gaattgcttt tcatgtgaaa tcattgtggt ctatgagttt acaatactgc
5821 aaactgtgtt attttatcta aaccattgct taatgagtgt gttttccat gaatgaatat
5881 accgtgggtc atatgttagc atggcagcat ttcagatag cttttgttt gtgggaagt
5941 tggggtttg gggggagggg gagtattagt acgttgcag gaatagccta cttataatg
6001 atgggaatgc ttttctttt gtttgggat tttttttt gaagtgaat ttaactttt
6061 gtgccagtag tactattata cccatcttca gtgtcttact tgtactgtat caaattccat
6121 accctcattt aattcttaat aaaactgttc acttgtaaaa aaaaaaaaaa aaaaaaaaaa
6181 aaaaaaaaaa

Sequence 6— Human mRNA sequence of VPARP

1 cgcccgccca gccccggggg cagggaaagc ctaaattacg gaattaccgc gagcaaggag
61 cgcggaatcg gggagcgtcc ggagctagct ggatcctcta ggcaggatgg tgatgggaat
121 ctttgcaaat tgtatcttct gttgaaagt gaagtactta cctcagcagc agaagaaaaa
181 gctacaaact gacattaagg aaaatggcgg aaagtttcc ttctgtaa atcctcagt
241 cacacatata atcttagata atgctgatgt tctgagtcag taccaactga attctatcca
301 aaagaaccac gttcatattg caaaccaga ttttatatgg aaatctatca gagaaaagag
361 actcttggat gtaaagaatt atgatcctta taagcccctg gacatcacac cacctcctga
421 tcagaaggcg agcagttctg aagtgaaaac agaaggtcta tgcccggaaca gtgccacaga
481 ggaggaagac actgtggaac tctactgagt tggtatgcag aatgttgaaa ttctcatct
541 tctcaagat ttgaagttg caaaatataa caccttggag aaagtgggaa tggagggagg
601 ccaggaagct gtggtggtgg agcttcagtg ttcgcgggac tccagggact gtccttctc
661 gatatctca cacttctcc tggatgatgg catggagact agaagacagt ttgctataaa
721 gaaaacctct gaagatgcaa gtgaatactt tgaaaattac attgaagaac tgaagaaaca
781 aggatttcta ctaagagaac atttcacacc tgaagcaacc caattagcat ctgaacaatt
841 gcaagcattg ctttggagg aagtcatgaa ttcaagcact ctgagccaag aggtgagcga
901 tttagtagag atgatttggg cagaggccct gggccacctg gaacacatgc ttctcaagcc
961 agtgaacagg attagcctca acgatgtgag caaggcagag gggattctcc ttctagtaaa
1021 ggcagcactg aaaaatggag aaacagcaga gcaattgcaa aagatgatga cagagtttta
1081 cagactgata cctcaciaaag gcacaatgcc caaagaagtg aacctgggac tattggctaa
1141 gaaagcagac ctctgccagc taataagaga catggttaat gtctgtgaaa ctaattgtc
1201 caaacccaac ccaccatccc tggccaaata ccgagcttg aggtgcaaaa ttgagcatgt
1261 tgaacagaat actgaagaat ttctcagggt tagaaaagag gttttgcaga atcatcacag
1321 taagagccca gtggatgtct tgcagatatt tagagtggc agagtgaatg aaaccacaga
1381 gtttttagc aaacttgga atgtgaggcc ctgttgcac ggttctctg taaaaacat
1441 cgtgggaatc ttgtgtcag ggttgcttt acccaaagta gtggaagatc gtggtgtgca
1501 aagaacagac gtcggaaacc ttggaagtgg gatttattc agtgattcgc tcagtacaag
1561 tatcaagtac tcacaccgg gagagacaga tggcaccaga ctctgtctca ttgtgaogt
1621 agccctcgga aagtgtatgg acttacatga gaaggacttt cccttaactg aagcaccacc
1681 aggctacgac agtgtgcatg gagtttaca aacagcctct gtcaccacag actttgagga
1741 tgatgaattt gttgtctata aaaccaatca ggttaaaatg aaatatatta ttaaattttc
1801 catgcctgga gatcagataa aggactttca tctagtgtat catactgaat tagaggaata
1861 cagacctgag tttaaaatt ttcaaaagt tgaagattac cagttaccag atgcaaaaac
1921 ttccagcagc accaaggccg gcctccagga tgctctggg aacttggtc ctctggagga
1981 tgtccacatc aaaggagaa tcatagacac ttagcccag gtcattgtt ttacagacata
2041 cacaataaaa agtcacgtgc ccattgaggc aaaatataatc ttcttttg atgacaaggc
2101 cgctgtgtgt ggcttgaag ccttcatcaa tgggaagcac atagtggag agattaaaga
2161 gaaggaagaa gccagcaag agtacctaga agccgtgacc cagggccatg gcgttacct
2221 gatgagtcag gatgtccgg acgttttac tgaagtgtt ggaaactac cccctaaggc
2281 taaggttctt ataaaaatta cctacatcac agaactcagc atctgggca ctgttggtgt
2341 cttttcatg cccgccaccg tagcaccctg gcaacaggac aaggcttga atgaaaacct
2401 tcaggatata gtagagaaga ttgtataaa agaaatagga acaaagcaaa gcttctctt
2461 gactatgtct attgagatgc cgtatgtgat tgaattcatt ttcagtata cacatgaact
2521 gaaacaaaag cgcacagact gcaaagctgt cattagcacc atggaaggca gtccttaga

2581 cagcagtggga ttttctctcc acatcgggtt gtctgctgcc tatctccaa gaatgtggg
2641 tgaaaaacat ccagaaaaag aaagcgaggc ttgcatgctt gtctttcaac ccgatctcga
2701 tgtcgacctc cctgacctag ccagtgaag cgaagtgatt atttgtcttg actgctccag
2761 ttccatggag ggtgtgacat tcttgcaagc caagcaaac accctgcatg cgctgtcctt
2821 ggtgggtgag aagcagaaag taaatattat ccagttcggc acaggttaca aggagctatt
2881 ttcgtatcct aagcataca caagcaatac cacggcagca gagttcatca tgtctgccac
2941 acctaccatg gggaacacag acttctggaa aacactccga tatcttagct tattgtacce
3001 tgctcgaggg tcacggaaca tctcctgggt gtctgatggg cacctccagg atgagagcct
3061 gacattacag ctctgaaga ggagccgccc gcacaccagg ttattgcct gcggtatcgg
3121 ttctacagca aatcgtcacg tottaaggat ttgtcccag tgtggtgccg gagtattga
3181 atattttaat gcaaaatcca agcatagttg gagaaaacag atagaagacc aaatgaccag
3241 gctatgttct ccgagttgcc actctgtctc cgtcaaatgg cagcaactca atccagatgc
3301 gcccagaggcc ctgcaggccc cagcccaggt gccatccttg ttctgcaatg atcgactcct
3361 tctctatgga ttattcctc actgcacaca agcaactctg tgtgactaa ttcaagagaa
3421 agaattttgt acaatgggtg cgactactga gcttcagaag acaactggaa ctatgatcca
3481 caagctggca gcccagctc taatcagaga ttatgaagat ggcattcttc acgaaaatga
3541 aaccagtcat gagatgaaaa aacaaacctt gaaatctctg attattaaac tcagtaaaga
3601 aaactctctc ataacacaat ttacaagctt tgtggcagtt gagaaaagg atgagaatga
3661 gtgcctttt cctgatattc caaaagttc tgaacttatt gccaaagaag atgtagactt
3721 cctgccctac atgagctggc aggggggagcc ccaagaagcc gtcaggaacc agtctctttt
3781 agcatcctct gagtggccag aattacgttt atccaaacga aaacatagga aaattccatt
3841 ttccaaaaga aaaatggaat tatctcagcc agaagttct gaagatttg aagaggatgg
3901 cttagggtga ctaccagctt tcacatcaaa ttggaacgt ggaggtgtgg aaaagctatt
3961 ggatttaagt tggacagagt catgtaaac aacagcaact gaaccactat ttaagaaagt
4021 cagtccatgg gaaacatcta ctctagctt ttctctatt ttggctccgg ccgttggttc
4081 ctatcttacc ccgactaccc gcgctcacag tctgcttcc ttgtctttg cctcatatcg
4141 tcaggtagct agtttcggtt cagctgctcc tcccagacag ttgatgcat ctcaattcag
4201 ccaaggccct gtgctggca cttgtgctga ctggatcca cagtggcgt cttgtcccac
4261 aggacctccc cagaaccac cttctgcacc ctattgtggc attgttttt cagggagctc
4321 attagctct gcacagtctg ctccactgca acatcctgga ggctttacta ccaggccttc
4381 tgctggcacc ttccctgagc tggattctcc ccagcttcat ttctcttc ctacagacc
4441 tgatcccatc agaggtttg ggtcttatca tccctctgct tactctcctt ttcatttca
4501 acctccgca gcctcttga ctgccaacct taggctgcca atggcctctg cttacctga
4561 ggctctttgc agtcagtccc ggactacccc agtagatctc tgtcttctag aagaatcagt
4621 aggcagtctc gaaggaagtc gatgtcctgt ctttgcctt caaagtctg acacagaaag
4681 tgatgagcta tcagaagtac ttcaagacag ctgctttta caaataaagt gtgatacaaa
4741 agatgacagt atcccgtgct ttctggaatt aaaagaagag gatgaaatag tgtgcacaca
4801 aactggcag gatgctgtgc cttggacaga actcctcagt ctacagacag aggatggctt
4861 ctggaaactt acaccagaac tgggacttat attaatctt aatacaaatg gtttgcacag
4921 ctttctaaa caaaaaggca ttcaatctct aggtgtaaaa ggaagagaat gtctcctgga
4981 cctaattgcc acaatgctgg tactacagtt tattcgacc aggttggaag aagagggat
5041 agtgttcaaa tcaatgatga aaatggatga ccttctatt tccaggaata ttccctgggc
5101 ttttgaggca ataaagcaag caagtgaatg ggtaagaaga actgaaggac agtaccatc
5161 tatctgccc cggcttgaa tggggaacga ctgggactct gccaccaagc agttgctggg
5221 actccagccc ataagcactg tgtccctct tcatagagtc ctccattaca gtcaaggcta
5281 agtcaaatga aactgaattt taaactttt gcatgcttct atgtagaaaa taatcaaatg
5341 ataatagata attataatga aacttacta aggttctt cagtgtagca attactgtct

5401 ttaaaaatta agtggagaa gaattacttt aatcaactaa caagcaataa taaatgaaa
5461 cttaaaataa aaaaaaaaaa aaaaaaaaaa